DOCUMENT RESUME

ED 430 186 CG 029 275

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TITLE Performance Approach, Performance Avoidance and Depth of Information Processing: A Fresh Look at Relations between Students' Academic Motivation and Cognition.
PUB DATE 1999-04-00
NOTE 26p.; Paper presented at the Annual Conference of the American Educational Research Association (Montreal, Quebec, Canada, April 19-23, 1999).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Academic Achievement; *Cognitive Processes; Elementary Education; Foreign Countries; Interviews; Literature Reviews; Objectives; *Recall (Psychology); Research; *Student Motivation; *Verbal Ability
IDENTIFIERS Australia (Sydney); *Avoidance Responses

ABSTRACT

This study combines a trichotomous motivational variable (mastery goal, performance approach, and performance avoidance goal) with an information-processing variable referred to as depth of processing, to investigate the effects of motivation on the encoding and recall of verbal information with a sample of infants and primary grade students (N=201) in Sydney, Australia. This study was able to replicate the design and pattern of results concerning the relationship between students' motivational orientations and the depth of students' information processing achieved by Graham and Golan. After analyzing the motivational prompts by Graham and Golan and recording similar results, it appears that they assessed a performance-avoidance rather than an ego-involving (performance-approach) condition. The results indicate that, even in the presence of a performance-avoidance or approach orientation, recall of verbal information was superior when it was analyzed for meaning (deep processing) rather than when the focus was on superficial characteristics (shallow processing). This indicates that deep processing may be relatively robust to varying motivational conditions. More differences were evident at the deeper levels of processing and in the second interview, which may indicate that motivational orientation may have "sleeper" effects on students' retrieval of information. (Contains 44 references, 2 figures, and 3 tables.) (Author/MKA)

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ED 430 186

Performance approach, performance avoidance and depth of information processing: A fresh look at relations between students' academic motivation and cognition.

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Paper presented at the annual meeting of the American Educational Research Association

Montreal
April, 19-23, 1999

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Statement of Problem

Achievement goal theory has emerged in recent research as the predominant explanation of students' academic motivation and behaviour (Seifert, 1995). In particular, two contrasting goals have received significant attention. These two opposing goals are mastery and performance goals. Mastery or task-goals refer to students attempts to 'master' a given skill or activity for the purpose of improving self-competence (Butler & Neuman, 1995). In contrast, performance or ego-involvement goals refer to students' attempts to demonstrate high ability relative to other students', or attempting to hide low relative ability.

Recent research partitions the performance goal into two independent motivational orientations; the goal to attain success over others (performance approach) and the goal to avoid failure (performance avoidance) (Middleton & Midgley, 1997). This distinction between these two variants of the performance goal have been incorporated into the present study since this distinction has received very little theoretical and empirical attention in recent research literature (Elliot & Harackiewicz, 1996).

Specifically this study combines a trichotomous motivational variable (mastery goal, performance approach and performance avoidance goal), with an information-processing variable referred to as depth of processing, to investigate the effects of motivation on the encoding and recall of verbal information. The concept of depth of processing is outlined in a classic article by Craik and Lockhart (1972). These theorists state that memory performance is largely influenced by the depth to which information is encoded or processed. Information can be processed at various levels, with deeper processing being associated with more effective retrieval of information.

The present study follows procedures outlined in Graham and Golan's (1991) study of the relationship between students' motivational orientations and the depth of students' information processing. However, unlike Graham and Golan's (1991) research, which combined an information processing variable (depth of processing) with a *dichotomous* motivational variable (task versus ego orientation), the present study combines depth of processing with a *trichotomous* motivational variable to examine how an individual's motivational state influences their depth of processing.

The importance of this research, then, is founded in its attempt to distinguish more precisely between students' distinct performance orientations and the effect these have on students' depth of processing.

Achievement Motivation and Depth of Processing

Many empirical studies examining achievement motivation have revealed that motivational factors, including intrinsic versus extrinsic orientations (Lepper & Greene, 1978), task involvement versus ego involvement (Nicholls, 1984), informational versus controlling feedback (Deci & Ryan, 1985), failure attributed to lack of effort versus low ability (Weiner, 1988), and learning goals versus performance goals (Dweck & Leggett, 1988): differentially effect achievement strivings. The way in which these motivational variables achieve their effects, and the cognitive processes involved, has received very little attention in research studies. Questions concerning what a motivated individual does to enhance cognitive performance remains largely unexplored.

Traditionally, task and ego motivational orientations have received the most attention in studies concerning achievement motivation. Extensive research of these two tendencies reveals task involvement leads to a more adaptive motivational state than ego involvement (Graham & Golan, 1991). However very recent research on achievement motivation offers an alternative framework by partitioning ego involvement into independent performance approach and performance avoidance goals. This recent dichotomy provides the opportunity to assess the distinct differences between the goal to demonstrate ability and the goal to avoid demonstrating lack of ability. This alternative goal dichotomy has received very little theoretical and empirical attention (Elliot & Harackiewicz, 1996). This study utilises a trichotomous variant of achievement goals, consisting of a mastery goal and the two performance goals outlined above.

It is thought that individuals' motivational state may directly influence the cognitive processes of information encoding or attention deployment. Despite early research, such as that by Weiner (1966) and Wine (1971), there have been a limited number of follow-up studies which have attempted to relate motivational incentives to specific aspects of cognitive psychology such as information processing. This research

study attempts to explore this relatively neglected topic by combining an information-processing variable with a trichotomous motivational variable to examine the effects of motivation on the encoding and retrieval of verbal information.

Information Processing

The quantity and quality of information retained by an individual depends largely on the perceptual and cognitive operations employed at the time of encoding (Benton, Glover & Bruning, 1983). A classic article by Craik and Lockhart (1972), explains this process of affecting memory, especially encoding operations, in terms of depth of processing. This framework is interpreted according to a hierarchy of processing which states the greater the 'depth' of processing, the greater the degree of semantic or cognitive analysis. Information may be processed at various levels. In summary, a deep level of processing leads to a more persistent memory trace resulting in better memory performance.

There are a number of methods which facilitate depth of processing, resulting in greater memory performance. One of these methods is to provide meaningful stimuli, since these are retained more rapidly then less familiar information. Another determinant to increase memory performance is to allow for ample processing time. Despite this, there are some theorists, for example Nelson (1977), who argue against time as an accurate predictor of memory performance. Research posits that the level of processing will determine the amount of information recalled. Interestingly, research shows that if attention is diverted from an item, the information will be lost according to its level of processing. For example, the deeper the level to which information is processed, the slower the resultant loss of information. It is argued that 'shallow' information processing, such as the simple recitation of information, to be processed, does not enhance memory performance (Fergus, Craik & Lockhart, 1972).

The information processing framework for human memory is not without its critics. Some critics argue for multistore theories which suggest the notion of information being transferred from one store to another. Others believe information must pass through short-term stores to be able to enter long-term stores (Nelson, 1977). Modifications to the depth of processing framework have been necessary in order to accommodate new data, and to deal with these opposing theoretical positions.

Student Motivation

In contemporary research on achievement motivation, goal theory has emerged as the predominant explanation of student's academic motivation and behaviour (Seifert, 1995). Goal theory, also known as achievement goal theory, focuses on the goals, or purposes perceived, for learning rather than on the actual level of motivation (e.g, students' ongoing interest or deep task involvement) (Middleton & Midgley, 1997). Two contrasting goals of achievement motivation have been the main focus of recent studies (Ames, 1992). These two goals are the goal to master a skill or activity in an attempt to seek competence (mastery orientation), and the goal to demonstrate superior ability (performance orientation).

Due to the predominance of goal theory, most studies have approached achievement motivation with the conceptualisation of the mastery goal versus the performance goal dichotomy. For example, the studies conducted by Butler and Neuman (1995), Fox, Goudas, Biddle, Duda and Armstrong (1994), and Nolen and Nicholls (1993); all combined a task versus an ego motivational variable in their achievement motivation research. However very recent research offers an alternative approach by partitioning the performance goal orientation into independent approach and avoidance motivational conditions. This dichotomy was incorporated into the earliest achievement motivation conceptualisation by such researchers as Lewin, Dembo, Festinger & Sears (1944) and McClelland (1951). However, it later received little theoretical and empirical attention and was eventually overlooked (Elliott & Harackiewicz, 1996).

For example, as reported by Middleton and Midgley (1997), the performance approach and avoidance goals were overlooked by Nicholls and his colleagues (e.g., Nicholls, Patashnick, Cheung, Thorkildsen & Lauer, 1989) when they developed a two item scale to examine the goal of avoiding looking inferior or stupid, which they referred to as 'avoid inferiority'. The results of the factor analysis indicated, as indicated by Middleton and Midgley, "that these items loaded with the items assessing the goal to demonstrate superiority, an approach goal". Subsequently, the two scales were combined and labelled 'ego-orientation'. Studies following this research disregarded the items assessing 'avoid inferiority' from the ego-orientation

measure. However, "the goal to avoid the demonstration of the lack of ability may be an influential motivational tendency". Despite this, it has, as yet, "not played a predominant role in studies using a goal theory framework" (Middleton & Midgley, 1997).

One study which adopted a goal theory framework to examine an avoidance component within the performance goal was Elliott and Harackiewicz (1996). They examined the partitioning of performance goals into independent approach and avoidance motivational orientations to examine both the goal to demonstrate ability and the goal to avoid the demonstration of lack of ability. The researchers found, after two laboratory studies in which they manipulated the performance goals, the significance of this conceptualisation and its utility in further research studies.

This study combines a trichotomous motivational variable (mastery versus performance approach and avoidance) with an information processing variable (depth of processing), to examine how individual's motivational states influence their levels of information processing. The importance of the research study is founded in its attempt to answer questions concerning how differentially motivated students differentially process information. Thus, the significance of this study is, in broader terms, to investigate the relationship between general principles of cognitive psychology and aspects of students' motivation.

Method

Statement of Hypothesis

The Literature Review suggests that motivational conditions combined with the depth of processing variable will influence individuals' academic performance. Students who are mastery oriented are thought to process information using more complex and effective strategies, while performance orientated individuals are believed to apply less sophisticated learning approaches (Meece, Blumenfeld, Hoyle, 1988). In consideration of the reviewed research, it is hypothesised that mastery goal oriented students will achieve higher scores on a verbal recall test than performance goal oriented students or students in a control group.

Research that has been examined for this study reveals information processed at a deeper level is processed more rapidly, and is better retained, therefore being more accessible at the time of recall. As a consequence it is hypothesised, that stimuli words, in the verbal test, requiring deeper levels of processing (i.e. taxonomic and semantic processing) will be recalled significantly better during free and cued recall, than the stimuli words requiring a shallower level of processing (i.e. phonemic processing).

Null Hypothesis.

The null hypothesis predicts there will be no significant difference in the means of three motivational groups (under the motivational conditions performance approach, performance avoidance and mastery) in their ability to recall information.

Participants

Participants in the study were two hundred and one infant and primary students (52.7% male and 47.3% female) attending a Public School in the Eastern Suburbs of Sydney, New South Wales, Australia. The ages of the students ranged from 4.6 years to 12.0 years. The sample comprised students from various ethnic backgrounds, socioeconomic stati, and displaying a range of cognitive abilities.

Procedure

The first step was to randomly allocate each student in the sample to one of three motivational conditions; performance avoidance, performance approach, and mastery, and a control condition group.

The participants were informed of the purpose of the study, which claimed to be helpful to teachers and researchers who were interested in improving school education by examining motivational strategies which result in higher student performance. The students involvement in the study was then explained to the subjects. They were informed that two interviews would be conducted. The content and questioning processes of the two interviews was explained, but not the motivational conditions to which each student would be subjected.

Experimental Task

The levels of processing questions used in the study were developed by Moscovitch and Craik (1976). The researcher discriminated the three levels of processing by creating questions requiring a shallow (phonemic) processing level using rhyme stimuli words, and questions requiring a deeper (taxonomic, semantic) level of processing through category and sentence stimuli words. The stimuli words of this study varied from Moscovitch and Craik (1976) as each word was selected so as not to exceed the reading level of students in each of the grades.

The experimenter selected the depth of processing framework to form questions because of the relevance of this framework to educational concerns. The experimenter also considered the depth of processing as it is a "relatively simple, well-validated and reliable methodology for describing and manipulating a set of cognitive activities that individuals perform on incoming information" (Graham & Golan, 1991).

The questions were ordered so as the words would rotate among the three question types. This method of rotation was formed to control for any effect of order in the questions. Two interviews with the same format, however, using varying stimuli words were adopted to further motivate the students and make for a more believable situation.

Each interview required the participants to answer three practice questions, one from each of the three processing levels, and then respond to a set of twelve questions. Of those twelve questions, one third required phonemic (rhyme) processing, one third required taxonomic (category) analysis, and the final one third required semantic (sentence) analysis.

In the initial interview, the participants were motivationally manipulated prior to responding to the practice questions. Following the three practice questions, the experimenter verbally asked the twelve depth of processing questions. The students responses to these questions were recorded systematically. The same process was implemented for the second interview, which took place one day after the participants' initial interview. The Appendices included in this paper display the interview question sheets used for each of the different age groups in the study.

Experimental Manipulation

The subjects were randomly assigned to one of four treatment groups to manipulate their motivational state. The four groups consisted of the mastery, performance approach, and performance avoidance orientations, and a control group. All four groups received instructions on how to complete the task. In addition to instructions, the mastery, performance approach, and performance avoidance orientation groups were motivationally prompted.

Below, in Table 1, is a description of each motivational condition and the instructions that the subjects received before answering the questions.

Table 1

Motivational Prompts

Mastery Orientation. Attempts to focus students' attention on their effort in an attempt to improve their mastery of the task, as opposed to comparing themselves to others. In the mastery focused condition the children were told:

If you concentrate on this task, try to see it as a challenge and enjoy mastering it, you will probably get better as you go along.

I am going to ask you some questions. I will say a word out-loud and then read you a question which you are to answer yes or no. I always want you to remember the first word I say because I am going to get you to tell me what they were later. I'll give you an example:

Fox *Does the word fox sound like box? Yes or No?*

Now, what was the first word I said?

Mat *Is the word mat a type of floor covering? Yes or No?*

Car *Does the word car make sense in the sentence: I like that car? Yes or No?*

Performance-avoidance; Attempts to focus students' attention on avoiding the appearance of lack of ability. In the performance avoidance condition the children were told:

Answer the following questions to this test with the correct answers then you will not

feel unhappy with yourself.

I am going to ask you some questions. I will say a word out aloud and then read you a question which you are to answer yes or no. I always want you to remember the first word I say because I am going to get you to tell me what they all were later. I'll give you an example:

Fox *Does the word fox sound like box? Yes or No?*

Now, what was the first word I said?

Mat *Is the word mat a type of floor covering? Yes or No?*

Car *Does the word car make sense in the sentence: I like that car? Yes or No?*

Performance-approach; Focuses students' attention on their self-perceived ability, or their ability in comparison to other students. In the performance approach condition the student were prompted with the following verbal cues.

People are either good at this activity compared to other kids their age or they are not. So how you do on this activity will tell me something about how good you are at this kind of task.

I am going to ask you some questions. I will say a word out aloud and then read you a question which you are to answer yes or no. I always want you to remember the first word I say because I am going to get you to tell me what they were later. I'll give you an example:

Fox *Does the word fox sound like box? Yes or No/*

Now, what was the first word I said?

Mat *Is the word mat a type of floor covering? Yes or No/*

Car *Does the word car make sense in the sentence: I like that car? Yes or No ?*

Control Group; No motivational prompts were administered, only instructions of how to complete the task were given.

I am going to ask you some questions. I will say a word out aloud and then read you a question which you are to answer yes or no. I always want you to remember the first word I say because I am going to get you to tell me what they were later. I'll give you

an example:

Fox *Does the word fox sound like box? Yes or No?*

Now, what was the first word I said?

Mat *Is the word mat a type of floor covering? Yes or No?*

Car *Does the word car make sense in the sentence: I like that car? Yes or No?*

Results

First Interview

Preliminary analyses showed no effect of age, gender or stimulus order. The data was therefore combined across these variables.

The number of stimulus words remembered under conditions of free and cued recall were analysed in separate 4 (experimental condition) x 3 (question type) analyses of variance (ANOVAs). Significant ANOVAs were followed by a post hoc comparison between the means, using Fisher's least significant difference (LSD) test (Pedhazur & Pedhazur Schmelkin, 1991). The free recall data are shown in the top half of Table 2, and the cued recall data are displayed in the bottom half of Table 2.

Table 2

Results for Interview One

Question Type	Mastery-focused (n=52) M	Mastery-focused (n=52) SD	Approach (n=51) M	Approach (n=51) SD	Avoidance (n=47) M	Avoidance (n=47) SD	Control (n=50) M	Control (n=50) SD	Marginal M
				FREE RECALL					
Rhyme	0.981	0.754	1.255	0.997	1.106	0.814	1.040	0.781	1.096
Category	1.538	0.999	1.471	1.222	1.340	0.939	1.320	0.999	1.417
Sentence	1.365	1.067	1.581	1.200	1.362	0.987	1.480	0.839	1.447
Total	1.295		1.436		1.270		1.280		
				CUED RECALL					
Rhyme	1.962	1.220	2.137	1.217	1894	1.108	1.740	1.084	1.933
Category	2.692	1.197	3.078	1.093	2.872	1.096	2.500	1.182	2.786
Sentence	3.269	0.819	3.039	1.076	2.894	1.088	2.920	1.158	3.031
Total	2.641		2.752		2.553		2.378		

Note: Maximum score = 4 within each question type.

Free Recall.

Table 2 shows that recall was relatively poor under conditions of free recall, with students recalling, on average, 33% of the stimulus words. However the ANOVA revealed a significant main effect of question type: $F(2, 196) = 5.71$, $MS = 3.21$, $p < .001$ which replicated the levels-of-processing effect of Graham and Golan's (1991) previous research. The row marginal means in Table 2 show that subjects recalled fewer rhyme words than category and sentence words. No significant difference between category and sentence words was evident ($p>.05$), which is also consistent with Graham and Golan's prior research. The main effect of experimental condition and its interaction with question type was not significant.

Cued Recall.

The bottom half of Table 2 shows that when children were given a list of the encoding questions as retrieval cues performance was much better, with approximately 65% of words recalled. A highly significant main effect of question type again replicated the levels of processing effect, $F(2, 196) = 6.02$, $MS = 3.19$, $p<.001$. The recall of encoded words for both category questions ($M = 2.8$) and sentence questions ($M = 3.1$) were higher when compared with rhyme questions ($M = 1.9$). There was a main effect of experimental condition for cued recall, $F(3, 98) = 4.22$, $MS = 3.48$, $p<.01$. Fewer words were recalled by children in the control group (7.16) than the mastery condition (7.9), performance approach condition (8.3) and the performance avoidance condition (7.7), $ps< .01$.

The effect of the experimental manipulation was not uniform across all levels of processing, as revealed by the significant Experimental Condition x Question Type interaction, $F(6, 196) = 2.28$, $p< .05$. This interaction is depicted in Figure 1.

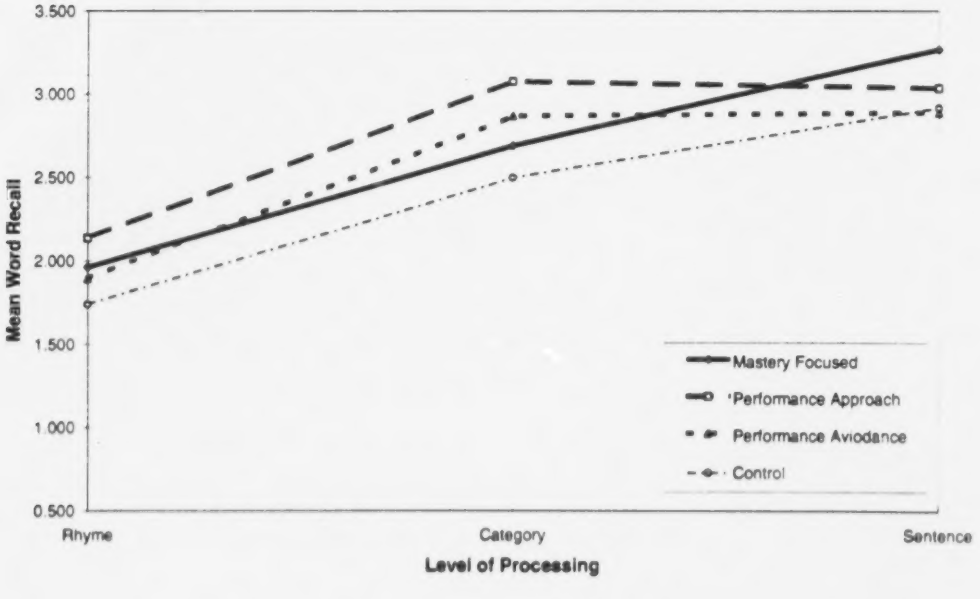

Figure 1. The interaction effect of motivational orientation and depth of processing.

The marginal row means for cued recall revealed that the number of rhyme (1.9) words recalled varied significantly between category words (2.8) and sentence words (3.0). Analysis within question type revealed no significant difference in the recall of rhyme words as a function of experimental condition ($F<1.0$). Students in the performance approach condition (3.1) recalled significantly more category words than the children in the control group (2.5).

Second Interview

Preliminary analysis showed no effect of age, gender or stimulus order. The data was therefore combined across these variables. The number of stimulus words recalled under conditions of free and cued recall were analysed in separate 4 (experimental condition) x 3 (question type) analyses of variance (ANOVAs). Significant ANOVAs were followed by a post hoc comparison between the means using Fisher's least significant difference (LSD) test (Pedhazur & Pedhazur Schmelkin, 1991). The free recall data are shown in the top half of Table 3, and the cued recall data are displayed in the bottom half of this table.

Table 3
Results of Interview Two

Question Type	Mastery-focused (n=52) M	Mastery-focused (n=52) SD	Approach (n=51) M	Approach (n=51) SD	Avoidance (n=47) M	Avoidance (n=47) SD	Control (n=50) M	Control (n=50) SD	Marginal M
FREE RECALL									
Rhyme	0.962	0.766	1.000	0.825	1.106	0.667	0.880	0.689	0.987
Category	1.635	1.085	1.745	0.935	1.596	0.970	1.380	1.048	1.589
Sentence	1.615	0.867	1.784	0.901	1.574	1.078	1.580	0.859	1.639
Total	1.404		1.510		1.426		1.280		
CUED RECALL									
Rhyme	2.096	1.225	2.353	1.278	2.298	1.102	2.060	1.236	2.202
Category	2.942	0.998	3.118	0.931	3.383	0.677	2.940	0.867	3.096
Sentence	3.365	0.841	3.235	0.929	3.511	0.804	3.140	0.969	3.313
Total	2.801		2.902		3.064		2.713		

Free Recall.

Table 3 shows that recall was relatively poor under conditions of free recall, with students recalling on the average 35% of the stimulus words. However, the ANOVA revealed a significant main effect of question type $F(2, 196) = 5.58$, $MS = 3.24$, $p < .001$, which replicated the levels-of-processing effect in Graham and Golan's (1991) previous research. The row marginal means in Table 3 show that subjects recalled significantly fewer rhyme words than category and sentence words (both *ps* <.001). No significant difference between category and sentence words was evident ($p>.05$), which is also consistent with Graham and Golan's prior research. The main effect of experimental condition and its interaction with question type was not significant.

Cued Recall.

The bottom half of Table 3 shows that when children were given a list of the encoding questions as retrieval cues performance was much better, with approximately 72% of words recalled. A highly significant main effect of question type again replicated the levels of processing effect, $F(2, 196) = 5.16$, $MS = 3.40$, $p<.001$. The recall of encoded words for both category questions ($M = 3.1$) and sentence questions ($M = 3.3$) did not differ dramatically and both were higher when compared with rhyme questions ($M = 2.2$). There was a main effect of experimental condition for cued recall, $F(3, 98) = 4.12$, $MS = 2.88$, $p<.01$. Performance avoidance motivated students (9.19) recalled significantly more words than students in the control group (8.14). Fewer words were recalled by children in the control group (8.14) than the in mastery condition (8.4), performance approach condition (8.71) and the performance avoidance condition (9.19), *ps*< .01.

The effect of the motivational manipulation was not uniform across all levels of processing, as revealed by the significant Experimental Condition x Question Type interaction, $F(6, 196) = 2.56$, $p< .05$. This interaction is depicted in Figure 2.

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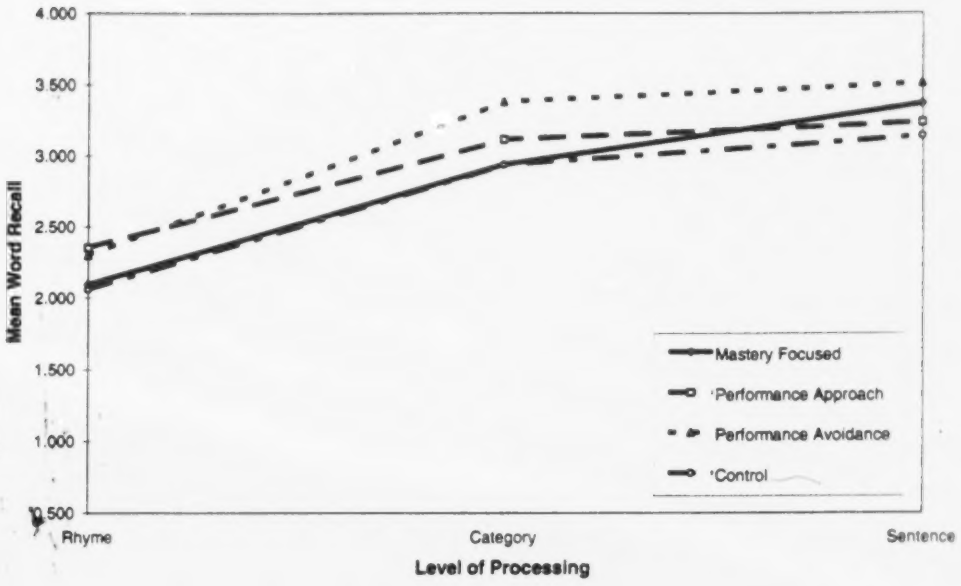

Figure 2. The interaction of motivational orientation and levels of processing.

The marginal row for cued recall revealed the number of rhyme (2.2) words recalled varied significantly from category words (3.1) and sentence words (3.3). Category words (3.1) systematically varied from Sentence words (3.3). Analysis within question type revealed no difference in recall of rhyme words as a function of experimental condition ($F<1$). Children in the mastery condition and control group recalled the same number of category words. However, students conditioned to performance avoidance goals recalled significantly more category words than both these two conditions. Students in the performance approach condition recalled slightly less category words than students in the performance avoidance condition. The recall scores for sentence words showed a significant difference between the performance avoidance condition and the control group, with the performance avoidance students remembering more sentence words.

Discussion

The Motivation-Cognition Interaction

The results of this study showed that students' recall of verbal information was superior when it was analysed for meaning (deep processing) rather than when the

focus was on superficial characteristics (shallow processing). These results are consistent with the findings from Graham and Golan (1991). This study replicates Graham and Golan's research concerning the relationship between students' depth-of-processing and motivation.

The results revealed no significant differences between the two performance goals. However, the results did reveal differences between the performance approach and avoidance goals and the mastery goal and control conditions. For example, in Interview One there was a significant difference between the performance approach and control group students during cued recall. In Interview Two there was a significant difference during free recall between the performance approach and the control group. During cued recall in the same interview, there were two significant differences between the mastery orientated and performance avoidance oriented students. Also, during cued recall for Interview Two, the performance avoidance students remembered significantly more category and sentence words than the control group. Thus, although there were no significant differences between the two performance goal conditions, the distinction between performance approach and performance avoidance remained a worthwhile one to pursue.

Regardless of whether the participants were conditioned to a mastery orientation, performance approach, or performance avoidance orientation, the recall was poorer when the verbal encoding task required shallow processing. When the task required deeper levels of processing, and when the verbal cues were adequate (i.e. during the cued recall test), students in the three experimental conditions displayed better recall than the children in the control group for both interview one (non-significant) and interview two (significant). In summary these findings indicate that shallow processing induces poor recall by students. However, verbal motivation associated with any of the trichotomous experimental conditions, enhanced student performance, as demonstrated in better recall. In a classroom situation, then, it may be more beneficial, for strict academic performance (without any consideration of the psychological effects on students), for the teacher to verbally motivate students using any of the three experimental manipulations, than simply giving instructions on how to complete a task.

Distinctions Between the Present and Previous Research

A potential weakness of Graham and Golan's study was their motivational prompt for the performance orientated students ("So how you do will tell me something about how good you are at this kind of task") (Graham & Golan, 1991, p. 189). This prompt conditions students to strive to avoid incompetence. Thus, it is a form performance avoidance motivation. However, Graham and Golan (1991) were attempting to motivate students to the condition of ego orientation where the main goal of achievement is to maintain positive self-esteem by demonstrating superior ability (i.e. performance approach). The results of the present study appear to confirm that Graham and Golan may have prompted their students according to a performance avoidance goal, since the findings of the present study replicate their results with respect to this orientation. It would be beneficial to examine the motivational prompts of other previous research to assess whether their motivational states were either a performance approach or performance avoidance condition.

The present study makes several modifications to Graham and Golan's (1991) study which appear to have enhanced the conceptual clarity of the research. This study incorporated two interviews rather than one therefore allowing the second interview situation to be more believable for the participants. It was also thought that the motivational prompts of the second interview, given in addition to the first interview, may induce a deeper motivational state than using one interview alone. Interestingly, the results from the second interview showed more significant differences than the first interview.

There are a few differences between the experimental groups with regard to the levels of processing in either interview. However, the differences which did occur were in the deeper levels of processing and were mostly in the second interview. This suggests that the motivational conditions appear to have their greatest impact when individuals process information at deeper levels.

Very few studies have examined young students' motivational states and their effects on students academic performance (Nicholls, 1978). Butler (1989) and Nicholls (1978) are two researchers that have investigated the motivation of young children. The present study, unlike Graham and Golan's (1991) research (which sampled children in late elementary years only) involved participants from varying age

groups including very young children, middle elementary and older elementary students. Therefore, the findings of this research may be relevant to a greater population of individuals than the studies above and, as such, may contribute to the understanding of motivation in young students as well as older students.

In Graham and Golan's (1991) study, only 17% of late elementary students remembered the stimulus words during free recall. During cued recall, the students remembered as little as 35% of the stimulus words. The low means show a potential weakness of Graham and Golan's study, founded in their use of sixty stimulus words. Taking into consideration the ages represented in the present sample, the present study limited the number of stimulus words to twelve. The results revealed better recall during the first interview (free recall, 33%; and cued recall, 65%). The second interview revealed slightly higher percentages than the first interview, for both free recall (65%) and cued recall (75%). Thus, the present research enabled students to recall a greater percentage of words in both interviews one and two. This enabled the analyses to be completed using higher means for both conditions of recall in both interviews and limited the chances that the participants would become disenchanted with the experimental procedure due to the large number of errors they were making during the recall tasks.

Unlike Graham and Golan's (1991) research, the present study revealed, during the second interview for cued recall; that students remembered significantly more sentence stimulus words than category stimulus words. We speculate that this difference is due to the fact that a sentence cue is more meaningful to students, especially younger and middle elementary students, than the category cue. Thus, we further speculate, that the sentence cue represents a deeper level of processing than the category cue. This hypothesis would account the greater number of correct responses of sentence stimulus words. This also implicates the desirability of using maximally meaningful cues when attempting to induce deep processing, whether in experimental or instructional situations.

Graham and Golan (1991) presented their stimulus words on a computer. However, the present study attempted to replicate a more realistic classroom situation, since the students received verbal cues from a teacher. The participants of the present study displayed significantly better results during free and cued recall when compared

with the participants from Graham and Golan's study. Perhaps, a factor contributing to the better performance of participants, in the present research study, is due to the students being placed in a more familiar situation. This would enable them to, potentially, feel more confident when responding to the questions which, in turn, may enhance their verbal recall.

Learning strategies applied by mastery orientated individuals are more sophisticated than those applied by performance orientated individuals (Seifert, 1995; Pintrich & Garcia, 1991; Pintrich & De Groot, 1990; Pokay and Blumenfeld, 1990; Roney, Higgins, & Shah, 1995). The findings from Graham and Golan's (1991) research also indicate that elementary students with a mastery goal are able to operate at deeper levels of processing than those with a performance orientation. The results from the present study, however, indicate that performance orientated individuals recalled more stimulus words than either the mastery or control groups. Thus, findings from the present research conflict somewhat with previous research. We speculate that, in particular, the fear of failure encourages students with a performance-avoidance goal to focus on the task at hand even more intensely than mastery oriented students. As a result, the performance-avoidance orientated students were able to recall more information than mastery orientated individuals.

Thus, the performance avoidance condition appeared to be a powerful short term motivator. Moreover, it may be an effective short term motivator for students of all ages. For example, Pintrich & Garcia (1991) state performance orientated students have a desire to prove their ability. However, they adopt simplistic strategies which require shallow processing. On the other hand, Pintrich and Garcia (1991) acknowledge that performance orientated individuals may utilise deep processing strategies to achieve success. This later hypothesis could explain why the performance avoidance individuals in this study performed better than the remaining two experimental conditions and the control group. Whatever the case, it is clear that the performance-avoidance orientation is not necessarily detrimental to recall in, at least, relatively simple processing tasks.

Whilst a performance-avoidance motivational state may induce better results in the short term, it may also have negative implications for long term recall. The present study evaluated recall over a twenty-four hour period. It may be that, over

longer periods, mastery motivated students may display better recall, although this aspect of information processing over time remains largely unexplored. Recent research conducted by Elliot and Sheldon (1998), however, has investigated performance avoidance motivation over time. Over the course of a semester, they found students who approached a task in the pursuit of a performance avoidance orientation suffered deleterious consequences for outcomes including performance, persistence, task involvement and intrinsic motivation. These findings, however, are yet to be confirmed and deserve further investigation.

The results of the present intervention indicate that motivational goal orientation drives the effectiveness of levels of processing as these relate to a student's recall abilities. Alternatively, however, it is possible that the deeper levels of processing may power motivational orientations. Bergin (1998), for example, hypothesises that cognitive strategies may, in fact, power student motivation. As another alternative, it is possible that academic motivation and cognition may share a reciprocal relationship in which they power one another. Whatever the case, the causal relationship between motivation and cognition deserves further investigation (see Dowson & McInerney, 1998a for one example of an attempt to specify causal relations between students' academic motivation and cognition.).

As a final note, it would be interesting for future research studies to combine the teaching of cognitive and metacognitive strategies alongside the provision of differing motivational prompts, in order to assess which motivational conditions induces better academic performance within the context of strategic instruction.

Conclusion

This study was able to replicate the design, and pattern of results, achieved by Graham and Golan (1991). After analysing the motivational prompts by Graham and Golan, and recording similar results, it appears that they assessed a performance-avoidance rather than an ego-involving (performance-approach) condition.

The results also indicate that, *even in the presence of a performance-avoidance or approach orientation*, recall of verbal information was superior when it was analysed for meaning (deep processing) rather than when the focus was on superficial

characteristics (shallow processing). This indicates that deep processing may be relatively robust to varying motivational conditions. This is supported by the fact that there were very few differences between the experimental groups on the depth of processing task. Despite this, more differences were evident at the deeper levels of processing, and were in the second interview which may indicate that motivational orientation may have 'sleeper' effects on students' retrieval of information.

References

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. Journal of Educational Psychology, 84, 261-271.

Benton, S., Glover, J., & Bruning, R. (1983). The effect of number of decisions on prose recall. Journal of Educational Psychology, 75, 382-390.

Bergin, D. A. (1998, April). Patterns of motivation orientation, learning strategies and achievement of high school students of colour. Paper presented at the annual meeting of the American Educational Research Association, San Diego.

Borkowski, J., Carr, M., Rellinger, E., & Pressley, M. (1990). Self-regulated cognition: Interdependence of meta-cognition, attributions, and self-esteem. In B.F. Jones, & L. Idol (Eds.), Dimensions of thinking and cognitive instruction (pp. 53-92). Hillsdale: NJ: Lawrence Erlbaum.

Butler, R. (1989). Interest in the task and interest in peers' work in competitive and noncompetitive conditions: A developmental study. Child Development, 60, 562-570.

Butler, R. & Neuman, O. (1995). Effects of task and ego achievement goals on help-seeking behaviours and attitudes. Journal of Educational Psychology, 87, 261-271.

Craik, F. & Lockhart, R. (1972). Levels of processing: A framework for memory research. Journal of Verbal Learning and Verbal Behaviour, 11, 671-684.

Deci, E. & Ryan, R. (1985). Intrinsic motivation and self-determination in human behaviour. New York: Plenum Press.

Dowson, M., & McInerney, D.M. (1998b, April). Cognitive and motivational determinants of students' academic performance and achievement. Paper presented at the annual meeting of the American Educational Research Association, San Diego.

Dweck, C. & Leggett, E. (1988). A social-cognitive approach to motivation and personality. Psychologist Review, 95, 256-273.

Elliot, A. & Harackiewicz, J. (1996). Approach and avoidance achievement goals and intrinsic motivation: A mediational analysis. Journal of Personality and Social Psychology, 70, 461- 475.

Elliot, A. & Sheldon, K. (1998). Avoidance achievement motivation: A personal gaols analysis. Journal of Personality and Social Psychology, 172-184.

Fox, K., Goudas, M., Biddle, S., Duda, J, & Armstrong, N. (1994). Children's task and ego goal profiles in sport. British Journal of Educational Psychology, 64, 253-261.

Graham, S. & Golan, S. (1991). Motivational influences on cognition: Task involvement, ego involvement, and depth of processing. Journal of Educational Psychology, 83, 187-194.

Harackiewicz, J. & Elliot, A. (1993). Achievement goals and intrinsic motivation. Journal of Personality and Social Psychology, 65, 904-915.

Kurita, J. & Zarbatany, L. (1991) Teachers' acceptance of strategies for increasing students; achievement motivation. Contemporary Educational Psychology, 16, 241-253.

Kurtz, & Borkowski. (1984). Children's meta-cognition: Exploring relations among knowledge, process and motivational variables. Journal of Experimental Child Psychology, 37, 335-354.

Lepper, M. & Greene, D. (1978). The hidden costs of reward. Hillsdale, NJ: Erlbaum.

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Lewin, K., Dembo, T., Festinger, L., & Sears, P. S. (1944). Level of aspiration, In J. McHunt (Ed.), Personality and the behaviour disorders (Vol. 3, pp. 229-315). New York: Academic Press.

McClelland, D. C. (1951). Measuring motivation in phantasy: The achievement motive. In H. Guetzkow (Ed.), Groups, leadership, and men (pp. 191-205). Pittsburgh, PA: Carnegie Press.

Meece, J., Blumenfeld, P. & Hoyle, R. (1988). Students' goal orientations and cognitive engagement in classroom activities. Journal of Educational Psychology, 77, 683-692.

Middleton, M. & Midgley, C. (1997). Avoiding the demonstration of lack of ability: An under-explored aspect of goal theory. Paper presented at the annual meeting of the American Educational Research Association, Chicago.

Moscovitch, M., & Craik, F. I. (1976). Depth of processing, retrieval cues, and uniqueness of encoding as factors in recall. Journal of Verbal Learning and Verbal Behaviour, 15, 447-458.

Nelson, T. O. (1977). Repetition and depth of processing. Journal of Verbal Learning and Verbal Behaviour, 16, 151-171.

Nicholls, J. (1978). The development of the conceptions of effort and ability, perceptions of academic attainment and the understanding that difficult tasks require more ability. Child Development, 49, 800-814.

Nicholls, J. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. Psychological review, 91, 328-346.

Nicholls, J., Patashnick, M., Cheung, P., Thorkildsen, T. A., & Lauer, J. M. (1989). Can achievement motivation theory succeed with only one conception of success? In F. Halisch & J. Van den Beroken (Eds.), International perspective on achievement motivation (pp. 187- 208). Lisse, The Netherlands: Swets & Zeitlinger.

Nolen, S. (1988). Reasons for studying: Motivational orientations and study strategies. Cognitions and Instructions, 5, 269-287.

Nolen, S. & Nicholls, J. (1993). Elementary school pupils' beliefs about practice for motivating pupils in mathematics. British Journal of Educational Psychology, 63, 414-430.

Pedhazur, Pedhazur, Schmelkin, (1991). Measurement, design, and analysis: An integrated approach. Hillsdale, NJ: Lawrence Erlbaum.

Pintrich, P. & De Groot, E. (1990). Motivational and self-regulated learning components of classroom academic performance. Journal of Educational Psychology, 82, 33-40.

Pintrich, P. & Garcia, T. (1991). Student goal orientation and self-regulation in the college classroom. Advances in Motivation and Achievement, 7.

Pokay, P. & Blumenfeld, P. (1990). Predicting achievement early and late in the semester: The role of motivation and the use of learning strategies. Journal of Educational Psychology, 82, 41-50.

Roney, C., Higgins, E. T., & Shah, J. (1995). Goals and framing: How outcome focus influences motivation and emotion. Personality and Social Psychology Bulletin, 21, 1151-1160.

Schiefele, (1991). Interest, learning, and experience. Educational Psychologist, 26, 299-233.

Schunk, D. (1985). Self-efficacy and school learning. Psychology in the Schools, 22, 208-223.

Schunk, D. (1989). Self-efficacy and cognitive skill learning. In C. Ames & R. Ames (Eds.), Research on motivation in education: Vol. 3. Goals and cognitions (pp. 13-44). New York: Academic Press.

Seifert, T. (1995). Characteristics of ego- and task-oriented students: a comparison of two methodologies. British Journal of Educational Psychology, 65, 125-138.

Shell, D., Bruning, R. & Colvin, C. (1995). Self -efficacy, attribution, and outcome expectancy mechanisms in reading and writing achievement: Grade-level and achievement level. Journal of Educational Psychology, 87, 386-398.

Skinner, Wellborn, & Connell, (1990) What it takes to do well in school and whether I've got it: A process model of perceived control and children's engagement and achievement in school. Journal of Educational Psychology, 82, 22-32.

Stipek, D. (1993) Motivation to learn: From theory to practice (2nd ed.). Needham Heights: Allyn and Bacon.

Tobias, S. (1985). Test anxiety: Interference, defective skills, and cognitive capacity. Educational Psychology, 20, 135-142.

Weiner, B. (1966). Motivation and memory. Psychological Monographs, 80, (18, Whole No.626).

Wine, J. (1971). Text anxiety and direction of attention. Psychological Bulletin, 76, 92-104.